

Algebra 2 - Final Exam Review

Cross out problems:

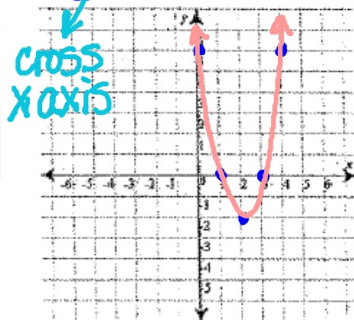
page 5 #1 and 2

page 6 #5 and 6

page 7 #9 and 10

3.) The table below represents a quadratic function.
Using a graph what are the zeros of $f(x)$?

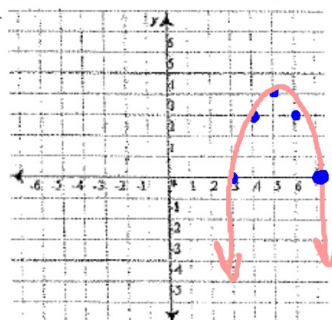
x	f(x)
0	6
2	-2
3	0
4	6



$(1, 0)$ $(5, 0)$

3.) YOU TRY: The table below represents a quadratic function. Using a graph what are the zeros of $f(x)$?

x	f(x)
3	0
4	3
5	4
6	3



$(3, 0)$ $(7, 0)$

4.) What is the equation of the parabola with vertex $(-1, 3)$ passes through the point $(-2, -2)$?

h k

x y x^2

solve for a:

$$y = a(x-h)^2 + k$$

$$-2 = a(-2+1)^2 + 3$$

$$\begin{array}{r} -2 = 1a + 3 \\ -2 = 1a + 3 \\ -5 = 1a \\ -5 = a \end{array}$$

a) $y = 5(x+1)^2 + 3$

b) $y = 5(x-1)^2 + 3$

c) $y = -5(x+1)^2 + 3$

d) $y = -5(x-1)^2 + 3$

4.) YOU TRY: What is the equation of the parabola with vertex $(3, 2)$ passes through the point $(-2, -3)$?

h k

x y x^2

solve for a:

$$y = a(x-h)^2 + k$$

$$-3 = a(-2-3)^2 + 2$$

$$\begin{array}{r} -3 = 25a + 2 \\ -3 = 25a + 2 \\ -5 = 25a \\ -5 = 25a \\ a = -\frac{1}{5} \end{array}$$

a) $y = \frac{1}{5}(x-3)^2 + 2$

b) $y = -\frac{1}{5}(x-3)^2 + 2$

c) $y = \frac{1}{5}(x+3)^2 + 2$

d) $y = -\frac{1}{5}(x+3)^2 + 2$

5.) The area of a rectangle is defined by the function $f(x) = x^2 + 3x - 10$. Determine the value(s) of x if the area is 98 ft².

$$\begin{array}{r} x^2 + 3x - 10 = 98 \\ -98 \quad -98 \\ \hline \end{array}$$

$$x^2 + 3x - 108 = 0$$

$$(x+12)(x-9) = 0$$

Answers: $x = -12, 9$ side length $\neq 0$

a) $x = -12, 9$

b) $x = 12, 9$

c) $x = 9$

d) $x = 12$

5.) YOU TRY: The area of a rectangle is defined by the function $f(x) = x^2 - 7x + 54$. Determine the value(s) of x if the area is 84 ft².

$$\begin{array}{r} x^2 - 7x + 54 = 84 \\ -84 \quad -84 \\ \hline \end{array}$$

$$x^2 - 7x - 30 = 0$$

$$(x-10)(x+3) = 0$$

$x = 10, -3$

$x = 10$

6.) An object is shot into the air and is represented by the equation $f(x) = -.25x^2 + 16x$, how long will it take for the object to hit the ground? $= 0$

$$0 = -.25x^2 + 16x$$

$$-.25(4)^2 + 16(4)$$

- (A) 4 seconds
- (B) 16 seconds
- (C) 64 seconds
- (D) ~~-4 seconds~~

6.) An object is shot into the air and is represented by the equation $f(x) = -.2x^2 + x$, how long will it take for the object to hit the ground? $y = 0$

$$0 = -.2x^2 + x$$

$$-.2(_)^2 + _$$

- (A) ~~0 seconds~~
- (B) 5 seconds
- (C) 10 seconds
- (D) 15 seconds

1.) If $f(x) = \frac{1}{x^2 - 3x - 40}$, what are the domain restrictions? what can't x be?

$$x^2 - 3x - 40 = 0$$

$$(x - 8)(x + 5) = 0$$

$$x \neq 8, -5$$

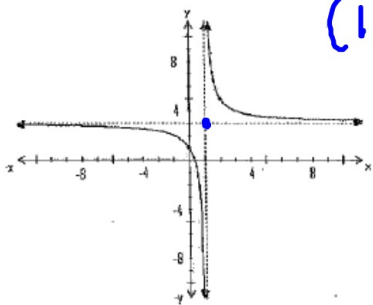
1.) YOU TRY: If $f(x) = \frac{1}{x^2 - 9x + 18}$, what are the domain restrictions? = what can't x be?

$$x^2 - 9x + 18 = 0$$

$$(x - 6)(x - 3) = 0$$

$$x \neq 6, 3$$

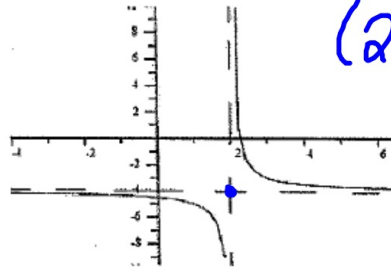
2.) The graph below is a translation of the parent function $f(x) = \frac{1}{x}$. What is the equation of the function? HINT - $f(x) = \frac{1}{(x-h)} + k$.



(1, 3)

$$f(x) = \frac{1}{(x-1)} + 3$$

2.) YOU TRY: The graph below is a translation of the parent function $f(x) = \frac{1}{x}$. What is the equation of the function? HINT - $f(x) = \frac{1}{(x-h)} + k$.



(2, -4)

$$f(x) = \frac{1}{(x-2)} - 4$$

h is always opposite, k is not!

3.) Solve $x - \frac{24}{x} = \frac{10}{1}$

LCD: $1 \cdot x$

$$\frac{x \cdot x}{x} - \frac{24}{x} = \frac{10x}{x}$$

$$x^2 - 24 = 10x$$

$$x^2 - 10x - 24 = 0$$

$$(x-12)(x+2) = 0$$

(A) $-\frac{10}{23}$

(B) $\frac{10}{23}$

(C) $12, -2$

(D) $-12, 2$

3.) YOU TRY: Solve $x + \frac{6}{x} = 5$.

(A) $x = -1$

(B) $x = \frac{5}{6}$

(C) $x = 3, 2$

(D) $x = 6, -1$

4.) For what x values is the function $f(x) = \frac{(x+2)}{x^2+3x}$ undefined? what can't x be?

$$x^2 + 3x = 0$$

$$x(x+3) = 0$$

$$x = 0 \quad x + 3 = 0$$

$$x \neq 0, -3$$

4.) YOU TRY: For what x values is the function $f(x) = \frac{(x-6)}{x^2-5x}$ undefined? what can't x be?

$$x^2 - 5x = 0$$

$$x(x-5) = 0$$

$$x \neq 0, 5$$

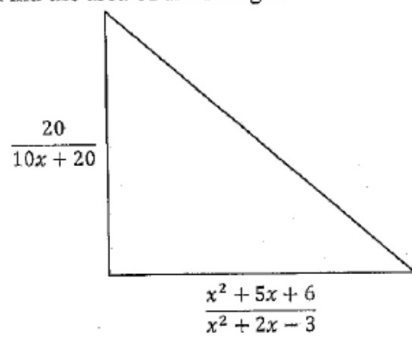
5.) $\frac{x^2-9}{x^2+2x-8} \cdot \frac{x^2+9x+20}{x^2-3x} =$

5.) YOU TRY: $\frac{x^2+6x+9}{x^2+10x+24} \cdot \frac{x^2+3x-18}{x+3} =$

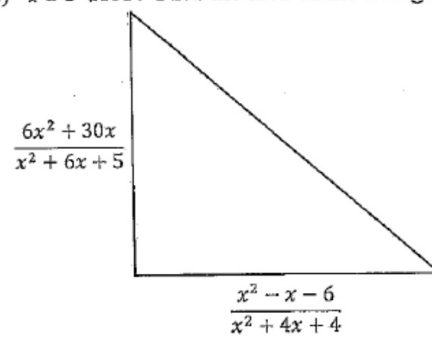
6.) Find the y-intercept of $f(x) = \frac{x^2-5x-6}{(x-1)}$.

6.) YOU TRY: Find the y-intercept of $f(x) = \frac{x^2+6x+8}{(x-2)}$.

7.) Find the area of the triangle.



7.) YOU TRY: Find the area of the triangle.



3.) Solve $9^{3x} = 81^{x-4}$.

3.) YOU TRY: Solve $64^{2x-3} = 256^{4-x}$.

4.) Joshua sets up a savings plan to transfer money from his checking account to his savings account. The first week \$5 is transferred, the second week \$10 is transferred, and the third week \$20 is transferred. If this pattern continues and he starts with \$150 in his checking account, how many weeks will pass before his balance is at/below zero?

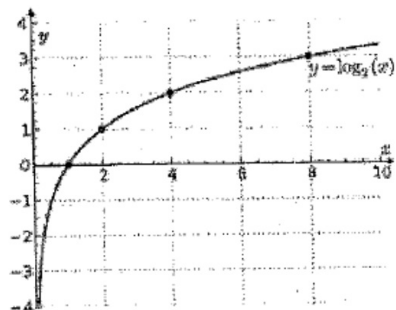
4.) YOU TRY: Brad sets up a savings plan to transfer money from his checking account to his savings account. The first week \$20 is transferred, the second week \$24 is transferred, the third week \$32 is transferred, and the fourth week \$48 is transferred. If this pattern continues and he starts with \$200 in his checking account, how many weeks will pass before his balance is at/below zero?

7.) A logarithmic function is graphed below, find the value of the following:

$$f(2) = \underline{\hspace{2cm}}$$

$$f(4) = \underline{\hspace{2cm}}$$

$$f(8) = \underline{\hspace{2cm}}$$

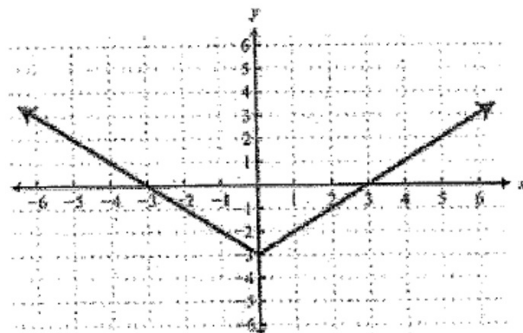


7.) An absolute value function is graphed below, find the value of the following:

$$f(-3) = \underline{\hspace{2cm}}$$

$$f(2) = \underline{\hspace{2cm}}$$

$$f(5) = \underline{\hspace{2cm}}$$



8.) If $7^x = 35$, find the value of 7^x .

8.) YOU TRY: If $25^{2x} = 125^{x-3}$, find the value of 5^x .

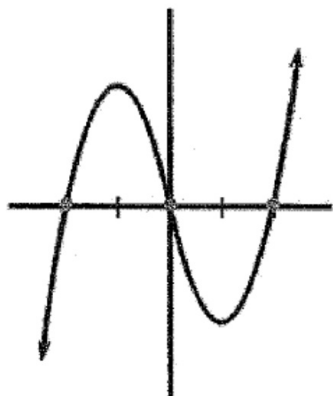
1.) What is the slope of the line $4x - 3y = 9$?

1.) YOU TRY: What is the slope of the line $3x + 2y = 6$?

2.) Given that one zero of $f(x) = x^3 + 9x^2 + 23x + 15$ is -5, what are the other two zeros?

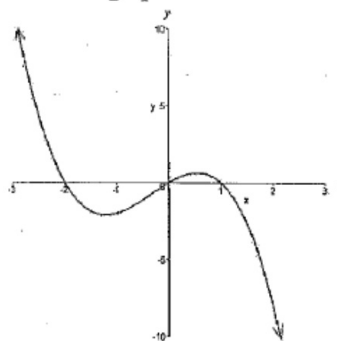
2.) YOU TRY: Given that one zero of $f(x) = x^3 - x^2 - 14x + 24$ is 3, what are the other two zeros?

3.) Which of the following equations could represent the graph below:



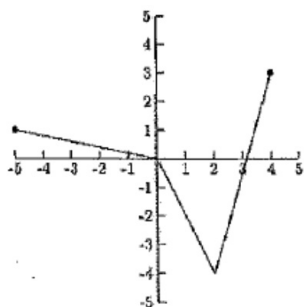
- a.) $-x^3 + 4x$
- b.) $x^3 - 4x$
- c.) $x^3 - 2x + 2$
- d.) $-x^3 + 2x - 2$

3.) YOU TRY: Which of the following equations could represent the graph below:

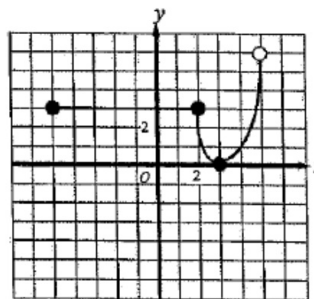


- a.) $x^3 - 2x^2 + 1$
- b.) $-x^3 + 2x^2 - 1$
- c.) $x^3 - x^2 - 2x$
- d.) $-x^3 + x^2 + 2x$

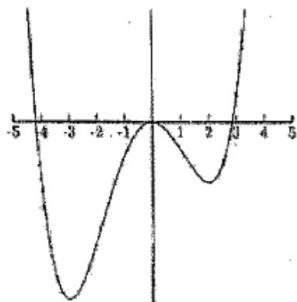
4.) State the domain and range.



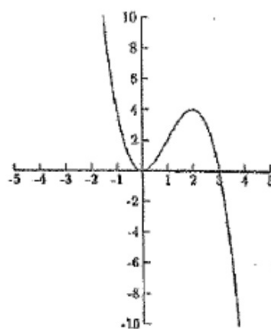
4.) YOU TRY: State the domain and range.



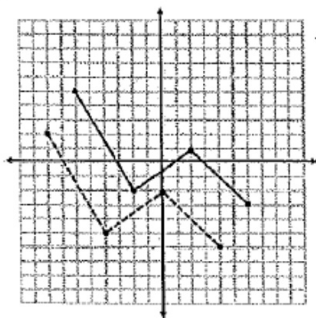
5.) Identify the intervals of increase and decrease.



5.) YOU TRY: Identify the intervals of increase and decrease.

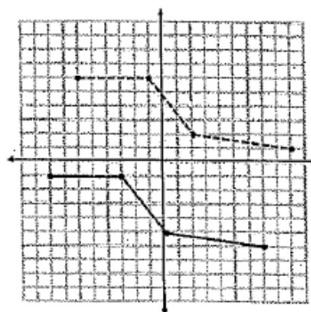


6.) The solid graph represents the graph of $f(x)$. The dotted graph represents which transformation of the solid graph?



- a.) $f(x - 2) + 3$
- b.) $f(x + 2) - 3$
- c.) $f(x + 3) - 2$
- d.) $f(x - 3) + 2$

6.) YOU TRY: The solid graph represents the graph of $f(x)$. The dotted graph represents which transformation of the solid graph?



- a.) $f(x + 2) - 7$
- b.) $f(x - 2) + 7$
- c.) $f(x + 7) - 2$
- d.) $f(x - 7) + 2$

